

PRODUCTION OF HYDROGEN FROM BIOMASS

ABSTRACT

Partial oxidation of a biomass is employed to provide producer gas followed by complete combustion of resulting solid remains from partial oxidation to provide a flue gas to furnish heat for the method. Producer gas is subjected to a steam reforming catalyst provided by heat from the flue gas for reforming of hydrocarbons contained in the producer gas to produce hydrogen and carbon monoxide. Following reforming, the gas, containing water vapor, is subjected to a steam shifting catalyst provided by heat from the flue gas to replace endothermic heat required to produce hydrogen and carbon dioxide. Remaining residue from combustion of the biomass is subjected to heat exchange to heat air for combustion. Shifted gas, containing substantial sensible heat, is employed to transfer heat to air and furnish heated air for partial oxidation.